

CLAIMS

1. A method of cutting a product of a predetermined shape from a sheet material comprising;

supporting a sheet material by a first support means

cutting through said sheet material by moving a line type cutter relative to said sheet material on a line or lines to define part of the perimeter of said predetermined shape whilst said sheet material remains supported by said first support means in a fixed relationship,

moving said sheet material, remaining in a fixed relationship with said first support means to a condition supporting said sheet material relative to and onto a support table,

whilst said sheet material remains in a fixed relationship with said first support means, cutting through said sheet material moving a line type cutter relative to said sheet material on a line or lines to define the remaining perimeter of said predetermined shape to thereby cut said shape from said sheet material whilst said sheet material is supported on said support table in a fixed relationship,

wherein said support table includes a through cut extending therethrough commensurate to the line or lines cut to define said remaining perimeter, said support table providing support to said predetermined shape after having been cut from said sheet material, and

wherein said first support means provides no supporting regions below where the line or lines to be cut during said first mentioned cutting procedure are to be made.

2. A method as claimed in claim 1 wherein sheet material remains supported by said first support means during the cutting of the remaining perimeter.

3. A method as claimed in claims 1 or 2 wherein said support means provides upward support to said sheet material at least at regions of the downwardly facing surface of said sheet material not to be cut during said first mentioned cutting procedure.

4. A method as claimed in any one of claims 1 to 3 wherein said support means provides upward support to said sheet material at regions of the downwardly facing surface of said sheet material not to be cut during said first mentioned cutting procedure.

5. A method as claimed in any one of claims 1 to 4 wherein said support means provides upward support to said sheet material at regions of the downwardly facing surface of said sheet material not to be cut during said second mentioned cutting procedure.

6. A method as claimed in any one of claims 1 to 5 wherein said support means provides upward support to said sheet material at the perimeter region only of the downwardly facing surface of said sheet material.

7. A method as claimed in any one of claims 1 to 6 wherein said support table is positioned for said second mentioned cutting procedure in an upwardly supporting condition to said sheet material to provide upward support to at least that part of said sheet material from where said predetermined shapes will be generated.

8. A method as claimed in any one of claims 1 to 7 wherein sheet material is engaged to said support means during at least said first mentioned cutting procedure by at least two location pins extending through said sheet material.

9. A method as claimed in claim 1 wherein during cutting of said sheet material on a line or lines to define part of the perimeter of said predetermined shape said support means provides support to said sheet material on the support means facing surface of said sheet material immediately adjacent the said line or lines are cut.

10. A method as claimed in any one of claims 1 to 9 wherein said second mentioned cutting procedure moves said cutting means to generate a line cut of said sheet material to strike the line of cut generated during said first mentioned cutting procedure.

11. A method as claimed in any one of claims 1 to 10 wherein said second mentioned cutting procedure moves said cutting means to generate at least two parallel lines of cut of said sheet material which each traverse across at least two parallel lines of cut generated during said first mentioned cutting procedure.

12. A method as claimed in any one of claims 1 to 11 wherein said second mentioned cutting procedure moves said cutting means to generate at least two parallel lines of cut of said sheet material which each extend across at least two parallel lines of cut generated during said first mentioned cutting procedure at right angles.

13. A method of cutting a product of a predetermined shape from a sheet material comprising

a) supporting said sheet material by a support means in a position engaging regions of said sheet material non-commensurate with a preliminary line or lines to be cut through said sheet material,

b) cutting said sheet by a line type cutter on a preliminary line or lines to define a part of the perimeter of said predetermined shape whilst remaining in support by said support means

c) moving sheet material and said means to support supporting said sheet material relative to another means of support to thereby provide upward support to said major surface of said sheet material by said another means to support to overly a non upwardly supporting region of said another means to support commensurate at least with a subsequent line or lines to be cut through said sheet material

d) cutting said sheet material by a line type cutter on a said subsequent line or lines to define further perimeter of said predetermined shape until a product of said predetermined shape is separated from said sheet material,

wherein said upward support to said major surface of said sheet by said or another support means, supports said predetermined shape once separated from said sheet, and

wherein said means to support and said another means to support are brought into register with each other prior to cutting of step (c).

30 14. A method as claimed in claim 13 wherein said product of predetermined shape is separated from said sheet material without repeating steps (c) and (d).

35 15. A method as claimed in claims 13 or 14 wherein a plurality of product of predetermined shape are cut from said sheet material by cutting in said first mentioned cutting step a plurality of discrete lines in said sheet material and cutting in said second mentioned cutting step at least one line in said sheet material to separate said products of predetermined shape.

16. A method as claimed in claims 13 or 14 wherein a plurality of product are cut from said sheet material by cutting in said first mentioned cutting step a line in said sheet material and cutting in said second mentioned cutting step at plurality of discrete lines in said sheet material to separate said products of predetermined shape.

10 17. A method as claimed in any one of claims 13 to 16 wherein said or another support means is a support table and said non upwardly supporting region of said support table are slots there through commensurate at least with said subsequent line or lines to be cut through said sheet material.

18. A method as claimed in claim 17 wherein said support table is separate from said first mentioned support means.

15 19. A method as claimed in any one of claims 13 to 18 wherein the first mentioned support means provides support to at least part of the perimeter only of said sheet material.

20. An apparatus for cutting a product having a perimeter of a predetermined shape from a sheet material comprising;

a first support means to receive said sheet material wherein no support is provided by said first support means at least along a line commensurate to a portion of the perimeter shape of said product to be cut in a first cutting procedure

a second support means including a support region to support said sheet material in a condition having said portion of said perimeter shape cut, said second support means including a slot or slots cut there through commensurate to the remaining portion of the perimeter shape of said sheet material to be cut in a second cutting procedure

at least one line type cutting means movable relative to said sheet material to cut through said sheet material during said first and second cutting procedure and to pass also through said second support means during a second cutting procedure

means to allow registration of the location of said first support means with said second support means to provide accurate positioning of said support region in support of said sheet material.

21. An apparatus as claimed in claim 20 wherein said first mentioned support means provides upward support to said sheet material at least at regions of the downwardly facing surface of said sheet material not to be cut during said first cutting procedure.

22. An apparatus as claimed in claims 20 or 21 wherein said first mentioned support means provides upward support to said sheet material at regions of the downwardly facing surface of said sheet material not to be cut during said first cutting procedure.

23. An apparatus as claimed in any one of claims 20 to 22 wherein said first mentioned support means provides upward support to said sheet material at regions of the downwardly facing surface of said sheet material not to be cut during said second cutting procedure.

24. An apparatus as claimed in any one of claims 20 to 23 wherein said first mentioned support means provides upward support to said sheet material at the perimeter region of the downwardly facing surface of said sheet material only.

25. An apparatus as claimed in any one of claims 20 to 24 wherein said second support region is positioned for said second cutting procedure in an upwardly supporting condition to said sheet material to provide upward support to at least that part of said sheet material from where said predetermined shapes will be generated.

26. An apparatus as claimed in any one of claims 20 to 25 wherein said support means include at least two location pins to extend through said sheet material.

27. An apparatus as claimed in claim 26 wherein said first mentioned first means includes a slot or slots cut there through commensurate to said portion of the perimeter shape of said product to be cut in a first cutting procedure.

28. An apparatus as claimed in claim 27 wherein each said slots of said first mentioned support means extend from a first end thereof at a perimeter edge of said support means to a second end thereof inward of the perimeter of said support means.

29. An apparatus as claimed in any one of claims 20 to 28 wherein each said slots of said second mentioned support means extend from a first end thereof from a feeder slot of said second mentioned support means to a second end thereof inward of the perimeter of said support means said feeder slot extending at a first end thereof at a perimeter edge of said second mentioned support means and at a second end inward of the perimeter of said second mentioned support means.

30. A method of cutting a product of a predetermined shape from a sheet material comprising;

supporting a sheet material in a first position by a first support means in a fixed relationship therewith

cutting through said sheet material by moving a line type cutter relative to said sheet material on a line or lines to define part of said predetermined shape whilst said sheet material remains supported by said first support means,

supporting said sheet material in a second position by a second support means which is moved relative to said first support means, said sheet material remains supported by said first support means

cutting through said sheet material by moving a line type cutter relative to said sheet material on a line or lines to define the remaining perimeter of said predetermined shape, to thereby cut said predetermined shape from said sheet material

wherein in said second position said sheet material is provided with upward support to support said predetermined shape to be cut from said sheet material by said second support means and

wherein in said second position said first support means and second support means includes a through hole commensurate to the line or lines to define the remaining perimeter of said predetermined shape.